This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): A multi-tone signal communications method for communicating information using N tones, where N is a positive integer greater than one, the method comprising:

generating N analog signals, each one of the N analog signals corresponding to a different one of the N tones, wherein each of the N analog signals includes a periodic signal representing a symbol to be transmitted during ~~said~~ a symbol transmission period;

separately generating N signal prefixes, one signal prefix being generated for each one of the N analog signals from the one of the N periodic signals included in the corresponding one of the N analog signals, each of the N signal prefixes including multiple parts and wherein the step of separately generating N signal prefixes includes, for each one of the N analog signals:

i) generating a first cyclic prefix part from the included periodic signal representing the current symbol; and

ii) generating a second prefix part from the included periodic signal representing the preceding symbol and from the first cyclic prefix part; and

transmitting the N analog signals into a communications channel using M antennas, where M is an integer and where 1<M<N.

Claim 2 (original): The method of claim 1, wherein M=N.

Claim 3 (original): The method of claim 1, further comprising the step of:

separately amplifying each of the N analog signals prior to transmitting said N analog signals.

Claim 4 (currently amended): The method of claim 3, wherein each of said N analog signals has a duration corresponding to ~~at least a~~ said symbol transmission period.

Claim 5 (original): The method of claim 4, wherein the N periodic signals and signal prefixes are generated in the passband.

Claim 6 (currently amended): The method of claim 3 4, wherein each of the N analog signals has a duration corresponding to multiple symbol transmission periods.

Claim 7 (canceled)

Claim 8 (previously presented): The method of claim 1, wherein the step of generating a second prefix part includes cyclically extending the periodic signal representing the included preceding symbol and cyclically extending the first cyclic prefix part to correspond to the same time period; and

combining and attenuating the cyclically extended portion of the first cyclic prefix part and the cyclically extended portion to the included periodic signal representing the preceding symbol.

Claim 9 (previously presented): A multi-tone signal communications method for communicating information using N tones, where N is a positive integer greater than one, the method comprising:

generating N analog signals, each one of the N analog signals corresponding to a different one of the N tones and wherein each of said N analog signals has a duration corresponding to at least a symbol transmission period and wherein each of the N analog signals includes a periodic signal representing a symbol to be transmitted during said symbol transmission period;

separately generating N signal prefixes, one signal prefix being generated for each one of the N analog signals from the one of the N periodic signals included in the corresponding one of the N analog signals;

separately amplifying each of the N analog signals prior to transmitting said N analog signals; and

transmitting the N analog signals into a communications channel using M antennas, where M is an integer and where $1 < M \leq N$,

wherein each of the N signal prefixes includes multiple parts and wherein the step of separately generating N signal prefixes includes, for each one of the N analog signals:

generating a first cyclic prefix part from the included periodic signal representing the current symbol; and

generating a second prefix part to be a periodic signal, the beginning of the generated second

prefix part having the same phase as the end of the periodic signal representing the preceding symbol and the end of the generated second prefix part having the same phase as the beginning of the first cyclic prefix part.

Claim 10 (original): The method of claim 6, wherein each of the N periodic signals is a sinusoidal wave.

Claim 11 (original): The method of claim 6, wherein each of the N periodic signals is a square wave.

Claim 12 (previously presented): A multi-tone signal communications method for communicating information using N tones, where N is a positive integer greater than one, the method comprising:

generating in parallel, for each one of the N tones, a separate periodic signal including at least one high order harmonic signal component that is different from the fundamental frequency signal component of said tone, wherein the generated periodic signal includes a square wave; and

transmitting the generated N periodic signals into a communications channel.

Claim 13 (original): The method of claim 12, wherein the periodic signal generated for each of the N tones, includes multiple high order harmonic signal components.

Claim 14 (canceled)

Claim 15 (original): The method of claim 12, further comprising:

generating, in parallel, for each one of the N tones, a separate periodic signal prefix.

Claim 16 (original): The method of claim 15, wherein the step of generating a separate periodic signal prefix for each one of the N tones includes, for each one of the N generated prefixes:

generating a cyclic prefix portion; and

generating a continuity signal portion, the continuity signal portion being generated as a function of a previously generated periodic signal and the current generated periodic signal.

Claim 17 (original): The method of claim 15, further comprising, for each one of the N tones, combining in the passband, the periodic signal corresponding to the one of the N tones with the corresponding one of the N periodic signal prefixes.

Claim 18 (previously presented): A multi-tone signal communications method for communicating information using at least N tones, where N is a positive integer greater than one, the method comprising:

separately generating, for each one of the N tones, a passband periodic signal representing a symbol, at least some of the N generated passband periodic signals include a high order harmonic signal component in addition to a fundamental frequency signal component, the

high order harmonic signal component having a frequency which is higher than the frequency of the fundamental signal component; and

transmitting the N generated passband periodic signals.

Claim 19 (original): The method of claim 18, wherein the passband periodic signals for each one of the N tones are generated in parallel; and

wherein the step of transmitting the N generated passband periodic signals includes broadcasting different ones of said N passband periodic signals using different antennas.

Claim 20 (previously presented): The method of claim 18, further comprising:

combining at least some of the N generated passband periodic signals prior to transmission.

Claim 21 (canceled)

Claim 22 (previously presented): The method of claim 18, wherein each of the N generated periodic signals is a square wave.

Claim 23 (original): The method of claim 18, further comprising:

generating, a separate prefix for each of the N generated passband periodic signals; and

combining, prior to transmission, each one of the separate prefixes with the corresponding one of the N generated passband periodic signals.

Claim 24 (original): The method of claim 23, wherein the prefixes for each of the N passband periodic signals are generated in parallel.

Claim 25 (original): The method of claim 23, wherein the step of combining each one of the separate prefixes with the corresponding one of the N generated passband periodic signals includes:

prepending the generated prefix to the corresponding one of the N generated passband periodic signals.

Claim 26 (original): The method of claim 23, wherein generating a separate prefix for each of the N generated passband periodic signals includes, for each separate prefix:

generating a first cyclic prefix part; and

generating a second prefix part, the second prefix part being generated using a different generation technique than the first prefix part.

Claim 27 (canceled):

Claim 28 (previously presented): A periodic signal processing method, the method comprising:

generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

processing the cyclic prefix portion to generate a continuity prefix portion from the cyclic prefix portion; and

appending the cyclic prefix portion to the end of the continuity prefix portion; and

communicating a signal including the generated multi-part prefix to a transmitter.

Claim 29 (previously presented): A periodic signal processing method, the method comprising:

generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

processing a preceding periodic signal to generate a continuity prefix portion from the preceding periodic signal; and

appending the cyclic prefix portion to the end of the continuity prefix portion; and

communicating a signal including the generated multi-part prefix to a transmitter.

Claim 30 (previously presented): A periodic signal processing method, the method comprising:

generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

processing the cyclic prefix portion and a preceding periodic signal to generate a continuity prefix portion from both the cyclic prefix portion and the preceding periodic signal; and

appending the cyclic prefix portion to the end of the continuity prefix portion; and

communicating a signal including the generated multi-part prefix to a transmitter.

Claim 31 (original): The method of claim 30, wherein said processing of the cyclic prefix portion and a preceding periodic signal includes:

performing a cyclic extension operation on the cyclic prefix portion to generate a first cyclic extension;

performing another cyclic extension operation on the preceding periodic signal to generate a second cyclic extension, the first and second cyclic extensions corresponding to a signal time period which is the same for both the first and second cyclic extensions; and

combining the first and second cyclic extensions corresponding to said signal time period to generate said continuity prefix portion, the step of combining the first and second cyclic extensions including:

windowing the combined cyclic extensions using an attenuating window.

Claim 32 (original): The method of claim 31, wherein each of said cyclic extension operations includes copying a portion of the signal upon which said cyclic extension operation is performed.

Claim 33 (previously presented): A periodic signal processing method, the method comprising:

generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

generating a continuity prefix portion;

appending the cyclic prefix portion to the end of the continuity prefix portion; and

wherein the continuity prefix portion has a frequency which is different from the frequency of the first periodic signal but has a phase at the point where the cyclic prefix portion is appended to the continuity prefix portion that is the same as the phase of the beginning of the cyclic prefix portion; and

communicating a signal including the generated multi-part prefix to a transmitter.

Claim 34 (previously presented): A periodic signal processing method, the method comprising:

generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

generating a continuity prefix portion;

appending the cyclic prefix portion to the end of the continuity prefix portion; and

wherein the continuity prefix portion has a phase at the beginning of the continuity prefix portion that is the same as the phase of the end of a preceding periodic signal; and

communicating a signal including the generated multi-part prefix to a transmitter.

Claim 35 (previously presented): A periodic signal processing method, the method comprising:

generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

generating a continuity prefix portion;

appending the cyclic prefix portion to the end of the continuity prefix portion; and

wherein the first periodic signal is one of N period signals corresponding to N different tones of a multi-tone signal, where N is a positive integer greater than one, the method further including:

generating for each of the N periodic signals, other than the first periodic signal, a separate multi-part prefix from a corresponding one of the N periodic signals, thereby generating N-1 multi-part signal prefixes in addition to the multi-part prefix generated from the first periodic signal; and

communicating a signal including the generated multi-part prefix to a transmitter.

Claim 36 (original): The method of claim 35, further comprising:

prepending each of the generated N-1 multi-part prefixes and the generated multi-part prefix generated from the first periodic signal to the corresponding ones of the N periodic signals from which the multi-part prefixes were generated.

Claim 37 (previously presented):
A periodic signal processing method, the method comprising:

generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

generating a continuity prefix portion;

appending the cyclic prefix portion to the end of the continuity prefix portion; and

wherein the first periodic signal is one of N period signals corresponding to N different tones of a multi-tone signal, where N is a positive integer greater than one, the method further including:

generating for each of the N periodic signals, other than the first periodic signal, a separate multi-part prefix from a corresponding one of the N periodic signals, thereby generating N-1 multi-part signal

prefixes in addition to the multi-part prefix generated from the first periodic signal;

prepending each of the generated N-1 multi-part prefixes and the generated multi-part prefix generated from the first periodic signal to the corresponding ones of the N periodic signals from which the multi-part prefixes were generated;

filtering each of the N periodic signals with prepended multi-part prefixes in parallel; and

transmitting the filtered N periodic signals with prepended multi-part prefixes into a communications channel.

Claim 38 (original): The method of claim 37, wherein the step of transmitting the filtered N periodic signals with prepended multi-part prefixes includes broadcasting different ones of the N periodic signals using different antennas.

Claim 39 (original): The method of claim 38, further comprising:

allowing the N broadcast periodic signals to combine in the communications channel to form an N tone OFDM signal.

Claim 40 (canceled)

Claim 41 (previously presented): A method of sequentially transmitting symbols in a multi-tone signal communication system using N tones per symbol period,

wherein the N tones remain the same for multiple symbol periods, the time period in which the N tones remain the same being a dwell, the method comprising:

for each symbol transmission period of the dwell:

rotating a constellation of symbols from which consecutive symbols are transmitted using one of said N tones by a fixed amount and which is a function of the duration of a multi-part prefix to be transmitted and with the selected symbol, wherein said fixed amount by which the constellation of symbols is rotated is a function of the tone frequency used;

selecting a symbol to be transmitted from a constellation of symbols to be transmitted using a signal corresponding to one of said N tones; and

transmitting N signals corresponding to each one of the N tones of the multi-tone signal, each one of the N signals being transmitted on a corresponding one of a first plurality of antennas, the antenna being used to transmit signals corresponding to a particular tone during the dwell remaining the same throughout the dwell.

Claim 42 (original): The method of claim 41, further comprising the step of:

for each symbol transmission period of a second dwell:

transmitting N signals corresponding to each one of the N tones of the multi-tone signal, each one of the N signals being transmitted on a corresponding one of a second plurality of antennas, the antenna being used to transmit signals corresponding to a particular tone during the second dwell remaining the same throughout the second dwell, the second plurality of antennas including at least one antenna which is different from the antennas included the first plurality of antennas.

Claim 43 (canceled)

Claim 44 (previously presented): The method of claim 41, wherein the rotation of the constellation during each of the plurality of symbol transmission period has a cumulative rotational effect on the constellation from which symbols are selected causing the rotation of the symbols in one symbol transmission period to effect the constellation from which symbols are selected during the next symbol transmission period.

Claim 45 (previously presented): The method of claim 41, wherein the rotation of the constellation during each of the plurality of symbol transmission periods is by a fixed additive amount which does not effect the position of the symbols in the constellation from which the next symbol is selected.

Claims 46-50 (canceled)

Claim 51 (previously presented): A system for generating and transmitting signals corresponding to an N tone multi-tone signal, where N is a positive integer greater than 1, the system comprising:

N periodic signal generator circuits for generating periodic signals, each periodic signal corresponding to a different tone one of the N tones of the multi-tone signal, wherein each of the N periodic signal generator circuits includes a square wave generator, each one of said N periodic signals including a square wave having a frequency component corresponding to one of said N tones of the multi-tone signal; and

N prefix generator circuits for independently generating periodic signal prefixes, each one of the N prefix generator circuits being coupled to a different corresponding one of the N periodic generator circuits.

Claim 52 (original): The system of claim 51, further comprising:

N filters for independently filtering the N periodic signals including prefixes generated by the N prefix generator circuits, each one of the N filters being coupled to a different corresponding one of the N prefix generator circuits.

Claim 53 (original): The system of claim 52, further comprising:

a plurality of M antennas, where M is an integer and where $1 < M < N$, each of the N filters being coupled to a single one of the M antennas and each one of

the M antennas being coupled to at least one of the N filters.

Claim 54 (original): The system of claim 53, wherein M = N.

Claim 55 (original): The system of claim 54, wherein M < N, the system further comprising, at least one analog combing circuit for combining signals from a subset of said N filters into a signal filter and for coupling each filter in the subset of said N filters one of said M antennas.

Claim 56 (canceled)

Claim 57 (original): The system of claim 51, wherein each of the N prefix generator circuits generates a separate prefix, each one of the N separate prefixes having the same duration.

Claims 58-60 (canceled)

Claim 61 (previously presented): A communications apparatus, comprising:

a periodic signal generator module for generating a first periodic signal; and

a prefix generation module for generating a multi-part prefix from a first periodic signal, the prefix generation module including:

means for performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

means for processing the cyclic prefix portion to generate a continuity prefix portion from the cyclic prefix portion; and

means for appending the cyclic prefix portion to the end of the continuity prefix portion.

Claim 62 (previously presented): A communications apparatus, comprising:

a periodic signal generator module for generating a first periodic signal; and

a prefix generation module including:

means for generating a multi-part prefix from a first periodic signal by performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

means for processing a preceding periodic signal to generate a continuity prefix portion from the preceding periodic signal; and

means for appending the cyclic prefix portion to the end of the continuity prefix portion.

Claim 63 (currently amended): A multi-tone signal communications apparatus for communicating information using N tones, where N is a positive integer greater than one, the apparatus comprising:

means for generating N analog signals, each one of the N analog signals corresponding to a different one of the N tones, wherein each of the N analog signals includes a periodic signal representing a symbol to be transmitted during ~~said~~ a symbol transmission period;

means for separately generating N signal prefixes, one signal prefix being generated for each one of the N analog signals from the one of the N periodic signals included in the corresponding one of the N analog signals, each of the N signal prefixes including multiple parts, said means for separately generating N signal prefixes including, for each one of the N analog signals:

i) means for generating a first cyclic prefix part from the included periodic signal representing the current symbol; and

ii) means for generating a second prefix part from the included periodic signal representing the preceding symbol and from the first cyclic prefix part; and

means for transmitting the N analog signals into a communications channel using M antennas, where M is an integer and where $1<M<N$.

Claim 64 (previously presented): The apparatus of claim 63, wherein M=N.

Claim 65 (previously presented): The apparatus of claim 63, further comprising the step of:

means for separately amplifying each of the N analog signals prior to transmitting said N analog signals.

Claim 66 (currently amended): The apparatus of claim 65, wherein each of said N analog signals has a duration corresponding to ~~at least a~~ said symbol transmission period.

Claim 67 (currently amended): A multi-tone signal communications apparatus for communicating information using N tones, where N is a positive integer greater than one, the apparatus comprising:

a processor configured to:

generate N analog signals, each one of the N analog signals corresponding to a different one of the N tones, wherein each of the N analog signals includes a periodic signal representing a symbol to be transmitted during ~~said~~ a symbol transmission period;

separately generate N signal prefixes, one signal prefix being generated for each one of the N analog signals from the one of the N periodic signals included in the corresponding one of the N analog signals, each of the N signal prefixes including multiple parts, said separately generating N signal prefixes including, for each one of the N analog signals:

generating a first cyclic prefix part from the included periodic signal representing the current symbol; and

generating a second prefix part from the included periodic signal representing the preceding symbol and from the first cyclic prefix part; and

communicate the N analog signals to a transmitter for transmission into a communications channel using M antennas, where M is an integer and where 1<M<N.

Claim 68 (previously presented): A communications apparatus for communicating information using N tones, where N is a positive integer greater than one, the apparatus comprising:

means for generating N analog signals, each one of the N analog signals corresponding to a different one of the N tones and wherein each of said N analog signals has a duration corresponding to at least a symbol transmission period and wherein each of the N analog signals includes a periodic signal representing a symbol to be transmitted during said symbol transmission period;

means for separately generating N signal prefixes, one signal prefix being generated for each one of the N analog signals from the one of the N periodic signals included in the corresponding one of the N analog signals;

means for separately amplifying each of the N analog signals prior to transmitting said N analog signals; and

means for transmitting the N analog signals into a communications channel using M antennas, where M is an integer and where $1 < M \leq N$,

wherein each of the N signal prefixes includes multiple parts and wherein the means for separately generating N signal prefixes includes, for each one of the N analog signals:

means for generating a first cyclic prefix part from the included periodic signal representing the current symbol; and

means for generating a second prefix part to be a periodic signal, the beginning of the generated second prefix part having the same phase as the end of the periodic signal representing the preceding symbol and the end of the generated second prefix part having the same phase as the beginning of the first cyclic prefix part.

Claim 69 (previously presented): The apparatus of claim 68, wherein each of the N periodic signals is a sinusoidal wave.

Claim 70 (previously presented): The apparatus of claim 68, wherein each of the N periodic signals is a square wave.

Claim 71 (previously presented): A multi-tone signal communications apparatus for communicating information using N tones, where N is a positive integer greater than one, the apparatus comprising:

a processor configured to:

generate N analog signals, each one of the N analog signals corresponding to a different one of the N tones and wherein each of said N analog signals has a duration corresponding to at least a symbol transmission period and wherein each of the N analog signals includes a periodic signal representing a symbol to be transmitted during said symbol transmission period;

separately generate N signal prefixes, one signal prefix being generated for each one of the N analog signals from the one of the N periodic signals included in the corresponding one of the N analog signals;

separately amplify each of the N analog signals prior to transmitting said N analog signals; and

communicate the N analog signals to M antennas for transmission into a communications channel, where M is an integer and where $1 < M \leq N$,

wherein each of the N signal prefixes includes multiple parts; and

wherein the processor is configured to, as part of separately generating N signal prefixes:

generate a first cyclic prefix part from the included periodic signal representing the current symbol; and

generate a second prefix part to be a periodic signal, the beginning of the generated second prefix part having the same phase as the end of the periodic signal representing the preceding symbol and the end of the generated second prefix part having the same phase as the beginning of the first cyclic prefix part.

Claim 72 (previously presented): A multi-tone signal communications apparatus for communicating information using N tones, where N is a positive integer greater than one, the apparatus comprising:

means for generating in parallel, for each one of the N tones, a separate periodic signal including at least one high order harmonic signal component that is different from the fundamental frequency signal component of said tone, wherein the generated periodic signal includes a square wave; and

means for transmitting the generated N periodic signals into a communications channel.

Claim 73 (previously presented): The apparatus of claim 72, wherein the periodic signal generated for each of the N tones, includes multiple high order harmonic signal components.

Claim 74 (previously presented): The apparatus of claim 72, further comprising:

means for generating, in parallel, for each one of the N tones, a separate periodic signal prefix.

Claim 75 (previously presented): A multi-tone signal communications apparatus for communicating information using N tones, where N is a positive integer greater than one, the apparatus comprising:

a processor configured to:

generate in parallel, for each one of the N tones, a separate periodic signal including at least one high order harmonic signal component that is different from the fundamental frequency signal component of said tone, wherein the generated periodic signal includes a square wave; and

communicate the generated N periodic signals to a transmission device for transmission into a communications channel.

Claim 76 (previously presented): A computer readable medium embodying machine executable instructions for controlling a communications device to implement a method of communicating with another device using a multi-tone signal including N tones, where N is a positive integer greater than one, the method comprising:

generating in parallel, for each one of the N tones, a separate periodic signal including at least one high order harmonic signal component that is different from the fundamental frequency signal component of said

tone, wherein the generated periodic signal includes a square wave; and

transmitting the generated N periodic signals into a communications channel.

Claim 77 (previously presented): A multi-tone signal communications apparatus for communicating information using at least N tones, where N is a positive integer greater than one, the method comprising:

means for separately generating, for each one of the N tones, a passband periodic signal representing a symbol, at least some of the N generated passband periodic signals include a high order harmonic signal component in addition to a fundamental frequency signal component, the high order harmonic signal component having a frequency which is higher than the frequency of the fundamental signal component; and

means for transmitting the N generated passband periodic signals.

Claim 78 (previously presented): The apparatus of claim 77, wherein the passband periodic signals for each one of the N tones are generated in parallel; and

wherein the means for transmitting the N generated passband periodic signals includes different antennas for broadcasting different ones of said N passband periodic signals.

Claim 79 (previously presented): The apparatus of claim 77, comprising:

means for combining at least some of the N generated passband periodic signals prior to transmission.

Claim 80 (previously presented): A multi-tone signal communications apparatus for communicating information using at least N tones, where N is a positive integer greater than one, the apparatus comprising:

a processor configured to:

separately generate, for each one of the N tones, a passband periodic signal representing a symbol, at least some of the N generated passband periodic signals include a high order harmonic signal component in addition to a fundamental frequency signal component, the high order harmonic signal component having a frequency which is higher than the frequency of the fundamental signal component; and

communicate the N generated passband periodic signals to a transmission device for transmission into a communications channel.

Claim 81 (previously presented): A communications apparatus comprising:

means for generating a multi-part prefix from a first periodic signal, the means for generating a multi-part prefix from the first periodic signal including:

i) means for performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

ii) means for processing the cyclic prefix portion to generate a continuity prefix portion from the cyclic prefix portion; and

iii) means for appending the cyclic prefix portion to the end of the continuity prefix portion; and

means for communicating a signal including the generated multi-part prefix to a transmitter.

Claim 82 (previously presented): A communications apparatus comprising:

a processor configured to:

generate a multi-part prefix from a first periodic signal by:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

processing the cyclic prefix portion to generate a continuity prefix portion from the cyclic prefix portion; and

appending the cyclic prefix portion to the end of the continuity prefix portion; and

communicate a signal including the generated multi-part prefix to a transmitter.

Claim 83 (previously presented): A communications apparatus, comprising:

means for generating a multi-part prefix from a first periodic signal, the step of generating a multi-part prefix from the first periodic signal including:

means for performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

means for processing a preceding periodic signal to generate a continuity prefix portion from the preceding periodic signal; and

means for appending the cyclic prefix portion to the end of the continuity prefix portion; and

means for communicating a signal including the generated multi-part prefix to a transmitter.

Claim 84 (previously presented): A communications apparatus, comprising:

a processor configured to:

generate a multi-part prefix from a first periodic signal, generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

processing a preceding periodic signal to generate a continuity prefix portion from the preceding periodic signal; and

appending the cyclic prefix portion to the end of the continuity prefix portion; and

communicate a signal including the generated multi-part prefix to a transmitter.

Claim 85 (previously presented): A communications device, comprising:

means for generating a multi-part prefix from a first periodic signal, the means for generating a multi-part prefix from the first periodic signal including:

means for performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

means for processing the cyclic prefix portion and a preceding periodic signal to generate a continuity prefix portion from both the cyclic prefix portion and the preceding periodic signal; and

means for appending the cyclic prefix portion to the end of the continuity prefix portion; and

means for communicating a signal including the generated multi-part prefix to a transmitter.

Claim 86 (previously presented): The apparatus of claim 85, wherein said means for processing of the cyclic prefix portion and a preceding periodic signal includes:

means for performing a cyclic extension operation on the cyclic prefix portion to generate a first cyclic extension;

means for performing another cyclic extension operation on the preceding periodic signal to generate a second cyclic extension, the first and second cyclic extensions corresponding to a signal time period which is the same for both the first and second cyclic extensions; and

means for combining the first and second cyclic extensions corresponding to said signal time period to generate said continuity prefix portion, the means for combining the first and second cyclic extensions including:

means for windowing the combined cyclic extensions using an attenuating window.

Claim 87 (previously presented): The apparatus of claim 86, wherein each of said means for performing cyclic extension operations includes means for copying a portion of the signal upon which said cyclic extension operation is performed.

Claim 88 (previously presented): A communications device, comprising:

a processor configured to:

generate a multi-part prefix from a first periodic signal, generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

processing the cyclic prefix portion and a preceding periodic signal to generate a continuity prefix portion from both the cyclic prefix portion and the preceding periodic signal; and

appending the cyclic prefix portion to the end of the continuity prefix portion; and

communicate a signal including the generated multi-part prefix to a transmitter.

Claim 89 (currently amended): A first communications device, comprising:

means for generating a multi-part prefix from a first periodic signal, the means for generating a multi-part prefix from the first periodic signal including:

means for performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

means for generating a continuity prefix portion;

means for appending the cyclic prefix portion to the end of the continuity prefix portion; and

wherein the continuity prefix portion has a frequency which is different from the frequency of the first periodic signal but has a phase at the point where the cyclic prefix portion is appended to the continuity prefix portion that is the same as the phase of the beginning of the cyclic prefix portion; and

means for communicating a signal including the generated multi-part prefix to a second device.

Claim 90 (previously presented): A communications device, comprising:

a processor configured to:

generate a multi-part prefix from a first periodic signal, generating a multi-part prefix from the first periodic signal including:

performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

generating a continuity prefix portion;

appending the cyclic prefix portion to the end of the continuity prefix portion; and

communicate a signal including the generated multi-part prefix to a second device; and

wherein the continuity prefix portion has a frequency which is different from the frequency of the

first periodic signal but has a phase at the point where the cyclic prefix portion is appended to the continuity prefix portion that is the same as the phase of the beginning of the cyclic prefix portion.

Claim 91 (currently amended): A first communications device, comprising:

means for generating a multi-part prefix from a first periodic signal, the means for generating a multi-part prefix from the first periodic signal including:

means for performing a cyclic extension operation on the first periodic signal to generate a cyclic prefix portion;

means for generating a continuity prefix portion;

means for appending the cyclic prefix portion to the end of the continuity prefix portion; and

wherein the continuity prefix portion has a phase at the beginning of the continuity prefix portion that is the same as the phase of the end of a preceding periodic signal; and

means for communicating a signal including the generated multi-part prefix to a second device.

Claim 92 (previously presented): An apparatus for sequentially transmitting symbols in a multi-tone signal communication system using N tones per symbol period, wherein the N tones remain the same for multiple symbol

periods, the time period in which the N tones remain the same being a dwell, the apparatus comprising:

means for rotating a constellation of symbols from which consecutive symbols are transmitted using one of said N tones by a fixed amount and which is a function of the duration of a multi-part prefix to be transmitted and with the selected symbol, wherein said fixed amount by which the constellation of symbols is rotated is a function of the tone frequency used;

means for selecting a symbol to be transmitted from a constellation of symbols to be transmitted using a signal corresponding to one of said N tones; and

means for transmitting N signals corresponding to each one of the N tones of the multi-tone signal, each one of the N signals being transmitted on a corresponding one of a first plurality of antennas, the antenna being used to transmit signals corresponding to a particular tone during the dwell remaining the same throughout the dwell.

Claim 93 (previously presented): The apparatus of claim 92, further comprising

means for transmitting N signals corresponding to each one of the N tones of the multi-tone signal, each one of the N signals being transmitted on a corresponding one of a second plurality of antennas, the antenna being

used to transmit signals corresponding to a particular tone during a second dwell remaining the same throughout second dwell, the second plurality of antennas including at least one antenna which is different from the antennas included the first plurality of antennas.

Claim 94 (previously presented): An apparatus for sequentially transmitting symbols in a multi-tone signal communication system using N tones per symbol period, wherein the N tones remain the same for multiple symbol periods, the time period in which the N tones remain the same being a dwell, the apparatus comprising:

a processor configured to:

rotate a constellation of symbols from which consecutive symbols are transmitted using one of said N tones by a fixed amount and which is a function of the duration of a multi-part prefix to be transmitted and with the selected symbol, wherein said fixed amount by which the constellation of symbols is rotated is a function of the tone frequency used;

select a symbol to be transmitted from a constellation of symbols to be transmitted using a signal corresponding to one of said N tones; and

communicate N signals corresponding to each one of the N tones of the multi-tone signal to a corresponding one of a first plurality of antennas, respectively, the antenna being used to transmit signals

corresponding to a particular tone during the dwell remaining the same throughout the dwell.

Claim 95 (previously presented): A system for generating and transmitting signals corresponding to an N tone multi-tone signal, where N is a positive integer greater than 1, the system comprising:

N periodic signal generator modules for generating periodic signals, each periodic signal corresponding to a different tone one of the N tones of the multi-tone signal, wherein each of the N periodic signal generator circuits includes a square wave generator, each one of said N periodic signals including a square wave having a frequency component corresponding to one of said N tones of the multi-tone signal; and

N prefix generator modules for independently generating periodic signal prefixes, each one of the N prefix generator modules being coupled to a different corresponding one of the N periodic generator modules.

Claim 96 (previously presented): The system of claim 95, further comprising:

N filter modules for independently filtering the N periodic signals including prefixes generated by the N prefix generator modules, each one of the N filters being coupled to a different corresponding one of the N prefix generator modules.